

The Heath Fritillary, *Mellicta athalia* Rott. in Britain: Notes on Distribution and Ecology

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The known natural distribution of *Mellicta athalia* Rott. in Britain is at present confined to the counties of Kent, Devon, Cornwall and Somerset. Within these counties the butterfly is generally further restricted to very local and sparsely scattered colonies. Some of these are remarkably sedentary, particularly in the West Country localities, while others tend to be somewhat peripetatic. In the Kentish colonies, which are perhaps better documented than any other, the latter habit prevails — I believe because of the heavy reliance of this strain of *athalia* on *Melampyrum pratense*, the Cow-wheat, as pabulum. This plant appears to thrive best in recently coppiced areas, and though it is quite tolerant of shade is quickly smothered by bracken or bramble. Hence, the statement that “the butterfly follows the wood-cutter” has some relevance in this particular area. I hope to expand on this further, but a comment on the past and present distribution of *athalia* in Kent is perhaps indicated at this stage.

A survey of this butterfly's fortunes in the county is provided in Volume 1 of J. M. Chalmers-Hunt's *Butterflies and Moths of Kent*, and it is from this excellent work that the following facts have been extracted. At one time Kentish *athalia* occurred in Chattenden Great Wood, and very locally in some of the remnants of the Great Wealden Forest between the Sussex border and Dover. It seems probable however, that since the 1940's it has been confined to the large block of woodland north of Canterbury, generally referred to as Blean Woods, after the ancient village of that name mentioned in Chaucer's *Canterbury Tales*. Here the butterfly occurs in mobile colonies over the wooded area from Herne south-west to Dunkirk. One of these colonies I kept under intermittent observation for over eight years. My wife and I found a small localised group of *athalia* in a part of Church Wood in 1968. It was our first encounter with *athalia* in Britain, and we were delighted to stumble on it, after an extensive search within that wood. There appeared to be no other colonies nearby, and the butterflies, perhaps twenty in all, were flitting over a twenty yard strip of heather, bracken and Cow-wheat on the edge of a newly-felled area of several acres. We next returned in July, 1970, when the site looked completely different. The chestnut stumps had sprouted into scattered bushes, and in between, the yellow Cow-wheat and Tormential flowers clustered amongst young heather and bracken shoots. The few butterflies of 1968 had produced a colony of several hundred, scattered over almost the whole of the cleared area. The original small heathy site was very difficult to identify because the wood had encroached. Some butterflies, however,

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had spread about two hundred yards into a wide, sunny oak ride which, though it looked virtually unchanged, had held no *athalia* two years previously. The following year we were living in Ashford, Kent, and were able to make more frequent visits. A few larvae were seen during the spring, all of them on or near Cow-wheat. On the 17th of June, no imagines were seen, but both sexes were still fresh on July 14th, when we returned from a fortnight's holiday in Cornwall (there the local *athalia* had been mostly extremely worn). My impression was that the numbers had, if anything, declined from the previous year, but the season was a cold and generally late one in Kent in 1971. The site in Church Wood was re-visited on June 29th, 1973, at the height of the emergence season. There were hundreds of *athalia* flying but much of the area was becoming overgrown, and the butterflies were more restricted than before, mainly to the remaining open spaces at the fringe of the mature forest where *Melampyrum* still flourished. In such an area, one could stand still and see thirty or forty specimens at once. Among them a fresh ab. *cymothoe* Bertolini looked very distinctive.

By 1974 the site had become overgrown. A few male *athalia* lingered beside the edge of the oak wood and along the path, but the Cow-wheat had become very sparse. Good clumps of the food plant could still be found in the aforementioned oak ride, but the butterfly had withdrawn from there once again. The following year in late spring I had great difficulty in finding any *Melampyrum* at all, and the site had reverted to a solid chestnut thicket totally unsuited to *athalia*.

Both the rise and fall of this colony was thus extremely rapid, taking perhaps only one or two seasons in each case, but a relative peak was maintained for at least four seasons.

Since 1970 I have observed several other colonies of *athalia* in Blean Woods, and all of these have had the characteristic clumps of *Melampyrum*, usually growing along an open ride or among well-lit chestnut coppice. In the *Butterflies and Moths of Kent* one instance of *Veronica chamaedrys* as pabulum is given, but only "after the *M. pratense* had been mostly eaten up." There is also one instance of larvae feeding commonly on *Plantago lanceolata*. J. M. Chalmers-Hunt states, however, that the normal food plant of this species in Kent is common Cow-wheat, and himself records finding larvae abundantly feeding on this plant shortly before dusk. I believe that it is this decided preference for, if not dependence upon, *Melampyrum*, and hence the entire coppicing cycle, that has been the chief factor in the well-recorded shifting colonies of this ecologically specialised Kentish race of *athalia*.

Elsewhere, both in England and on the Continent, the Butterfly appears far more catholic in its tastes, both with regard to pabulum and habitat. In Devon and Cornwall the butterfly frequents stream banks, heathy scrubby slopes and

also grassy hillsides far from any sizeable trees, as well as woodland clearings. In all of the West Country colonies I have visited (three in Cornwall and one in Devon) *Melampyrum* is present, but certainly not enough to support entirely the more flourishing populations. I have only once found larvae in Cornwall, and that was on plantain; but in the same strong colony, in 1974, the larvae were found feeding on a variety of food plants, including foxglove, speedwell, yarrow and woodsage. On this occasion, despite the large spreads of *Melampyrum* in the locality, the larvae appeared to be ignoring it completely. The resulting brood of imagines was exceptionally abundant that year (A. Creber, *in litt.* 1974).

Regarding *M. athalia*, in the *Natural History of British Butterflies* (1871), Edward Newman gives his usual accurate description of a life-history, and also points out the uncanny resemblance of the full-grown larva to a plantain head. He mentions as food plants all of the following: *Plantago lanceolata*, *P. major*, *Veronica chamaedrys* and *Teucrium scorodonia* (Woodsage), and fails to include *Melampyrum* at all. Significantly perhaps, Edward Newman's larvae were supplied by a Mr. Bignall, whom I assume to be the same person later listed as a recorder of the species near Plymouth. It seems not unreasonable to infer that Bignall might also have been the source of information on the food plants which correspond so closely to those used by West Country *athalia* today. Another of Newman's recorders, J. J. Reading, also mentions finding larvae feeding on *P. lanceolata* and *T. scorodonia*, and though he fails to specify the site of occurrence he does give a list of several Devon localities. In direct contrast to this is the account in Richard South's *Butterflies of the British Isles* (1921), in which Cow-wheat is emphasised as the main food plant — all the references to life history given here are to Kent and Sussex. An interesting point is made in the same account, when Buckler is quoted as stating that his larvae would not eat plantain at all¹. I believe that the usual food plant of *athalia* in Devon and Cornwall is in fact plantain (as is probably also the case in much of the rest of Europe), but perhaps in years of abundance there is a temporary shift to other plants as well.

These characteristics of the western race of British *athalia* may explain the more static nature of many of the colonies, as plantain requires conditions far less specialised than those of *Melampyrum*, and is generally of course a much commoner plant. This also furnishes greater opportunity for these colonies to find other breeding sites within the area,

¹ I have in the past bred both Kentish and Cornish *athalia* (for several generations in each case) and used plantain solely for inducing the females to oviposit. Both strains of larvae accepted this readily, as they did *Digitalis* — when their increasing appetite made this more convenient to use. In captivity Kentish females would oviposit on plantain, but I thought reluctantly, and certainly fewer ova were obtained on average than from their Cornish counterparts.

if for some reason the primary one should become unsuitable. I observed such a circumstance at a Devon locality, where in 1972 the butterflies were concentrated in a small space of approximately 50 yards by 5 yards, and were in great profusion. Upon a further visit in 1976, this original site had become overgrown, and the butterflies had spread into several neighbouring spaces which appeared not to have changed since the previous visit, although at that time they had harboured no *athalia* at all. More static conditions have occurred in another better known Cornish site in the middle of a wood above the Tamar, where for at least the last ten years there has been no more than slight shifts of local abundance in a thriving colony².

At present the centres of distribution in Devon and Cornwall seem to be (1) the middle part of the Tamar Valley, (2) scattered woodland around Callington and (3) the western fringes of Dartmoor. Formerly there were colonies near Looe and on Dartmoor itself, and perhaps some of these may yet survive³. I am reliably informed that the species still occurs in Somerset around Exmoor, but have no first-hand knowledge of its habits there.

Historically *athalia* has been found in several other English counties. In spite of repeated assertions in some books it no longer occurs in Abbots Wood, its only known Sussex locality, nor has it existed there naturally for at least the last half century. At one time however, it was abundant in this famous locality, and C. V. C. Levett (E. Newman, 1871) describes having ten in the net at one time. It was re-introduced into Abbots Wood, in about 1935, and this colony survived for probably no more than twenty years, although for a while it appeared to be holding its own quite well⁴. In Essex a native race of *athalia* died out in about 1890, in its last locality in the Dedham area. In 1925 however, it was re-introduced in the Hadleigh Woods, and ten years later a few miles north at Hockley. At Hadleigh, especially, it took very well, and survived for over forty years. In its heyday it was so abundant that the larvae could sometimes be found feeding on various cultivated plants, such as *Antirrhinum*, in the gardens of houses near the wood (A. Palmer, *pers. comm.* 1977). The colony became increasingly restricted however, until its presumed demise in the 1970's.

² Cow wheat grows there in small scattered clumps and also straggles out around some old drystone walls, but in my experience of this locality the females were nearly always encountered on a more open grassy slope where there were quite heavy growths of *Plantago lanceolata*.

³ There are specimens in the Booth Museum, Brighton labelled 'Princetown, Devon, 1901' (A. Tonge collection).

⁴ The immediate origin of this introduced stock seems somewhat in doubt. L. H. Newman (1954) states that A. H. Pickett transferred females direct from Blean Woods, whereas E. B. Ford (1945) says the butterflies were brought from Hadleigh, Essex. The Essex race at that time had Kentish ancestry anyway, so the point is an academic one only.

M. athalia was found in a number of other English counties within recorded entomological history — these include Buckinghamshire, Gloucestershire, Staffordshire, Suffolk and Wiltshire, in addition to those previously mentioned. E. B. Ford (*Butterflies*, 1945) mentions “ancient records from Oxfordshire and Gloucestershire, and records the capture of a specimen from Gloucestershire “within the last few years”. Guiting Wood, near Cheltenham was the nineteenth century locality but I am informed that it is not now the sort of place one would expect to find *athalia*.

With reference to Hampshire there is an intriguing statement concerning *athalia* in A. W. Richards' list of the lepidoptera of the Aldershot district — “still to be found in some woods in the north”. (Richards, 1957) It must be presumed that this refers to introduced stock but if this is the case it is strange that in the same list *Melitaea cinxia* L. is included but carefully specified as having been ‘put down’ on Laffans Plain. Dr. J. W. O. Holmes of Borden also showed me two specimens he had taken in Woolmer Forest but he felt that these were the result of an attempted introduction.

In view of the extensive range of *athalia* in Europe and Asia it is in some ways remarkable that it has not adapted to other parts of temperate Britain. In his comprehensive paper on the genus *Melicta*, Dr. L. G. Higgins (1955) remarks on the unusual powers of adaptability exhibited by *athalia* in that it has managed to establish itself across Europe from the Mediterranean to the Arctic ocean and from the coast of Brittany to the Pacific. He points out the astonishing variety of ecological conditions under which the butterfly exists within this area but that it is only in Arctic and subarctic Scandinavia that there is a constant distinction in the facies of *athalia*.

Throughout the rest of its wide distribution there is so much individual variation that general appearance and pattern are unreliable characteristics of geographic race. Nevertheless, in an attempt to compare the two British races I have examined series in various collections. The only difference I can detect concerns minor variation. This seems generally more prevalent in the western localities and females from Devon and Cornwall regularly occur in two different forms. Both are smaller on average than Kentish females but one is very similar if not identical in general condition and pattern. The other, however, tends to have rather contrasting yellow as well as reddish markings within the dark reticulate pattern. This form appears only rarely in Kent, but, in my experience, almost as frequently as the more unicolorous type in the West country. Unfortunately no series of set specimens I have examined can be said to be a truly random sample so I can only present this finding as a general impression. To obtain such a sample nowadays would clearly be out of the question in view of the somewhat vulnerable status of the butterfly in Britain.

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SOME NOTES ON THE VAPOURER MOTH: *ORGYIA ANTIQUA* L.
 — During 1979 I reared six *antiqua* larvae which all hatched on 22nd April from a single batch of eggs. They eventually produced four male imagines and two females. I was most interested to discover that the latter required four instars to complete their larval growth, the males only three, and wonder if this difference has been noted before? Three of the males emerged from their cocoons on 31st May and the remaining one on 2nd June, on which date one of the females also appeared. The other female emerged the previous day. — MARGARET REESE, Flat 6, 2 All Saints Road, Clifton, Bristol, BS8 2JH, 11.viii.1980.

A NORTHERN RECORD OF *AETHES BEATRICELLA* (WALS.).
 — A specimen of this moth was swept from vegetation on a stream bank at Waren Mill, Northumberland on 27th July 1980. Bradley, Tremewan & Smith in *British Tortricoid Moths*, Vol. I give the distribution of this moth as "... locally common in the southern and south-eastern counties of England, and apparently not found elsewhere ...". It is interesting to note that *beatricella* was recorded in 1976 from Derbyshire and Yorkshire, apparently for the first time (Harrison, F., *Ent. Rec.*, 89: 208). — PAUL SOKOLOFF, Orpington, Kent.